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A Semiotic Rosetta Stone: Developing a Designer-centric Meta-language of Pragmatic Semiotics.

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Abstract: In this paper I outline the development of a designer-centric meta-language that interfaces between practitioner and theoretician, without compromising their integrity and rigour. I express this through a Rosetta Stone metaphor and how, as a design researcher, I developed this concept when I had to pierce through Peirce's pragmatic semiotic theory to enhance aesthetic practice. I initially found it a challenge to understand Peirce's unfamiliar academic terminology without any prior formal education in Pragmatism or semiotic theory. The problem for designers is that theoretical language can be intimidating, arcane and opaque. In reviewing the Peircean literature I identified an absence of designer-centric literature, which would quickly facilitate designers' understanding of Semiosis. This paper therefore is a progressive call for more concerted collaboration between theoreticians and practitioners. This would ideally lead to new designer-centric Peircean literature being published, leading to the enhancement of aesthetic creative practice.

Keywords: Peirce, Semiosis, Designer-centric, Meta-language, Rosetta Stone

1. Introduction

Graphic designers and illustrators (I will now use the Frascaran term 'visual communication' designers (2004)) craft and manipulate text and imagery to visually communicate an intended message through which (to be really effective and meaningful), they need to consider a visual language beyond just a surface aesthetic. How they do this is a major part of their disciplinary skill sets, first developed during their design school education, and then through a professional career. But any theory visual communication' designers learn is so embedded in the development of their practice-based skills, that they class this knowledge as 'tacit.' Different theoretical frameworks help them to do this, but they do need to understand a theory beyond a surface level of understanding. The pragmatic semiotic theory of Charles Sanders Peirce's Semiosis (1931-1933) is just one theoretical framework that can enhance their practice. But if they are not educated in a theory beyond surface exposure at design school, there is a problem that needs a solution.

In 1995 design critics Michael Rock and Rick Poynor in Eye magazine discussed designers having had "an aversion to theory" (pp56-59). Visual communication designers would be the first to describe their design process as tacit or instinctive, but in reality their work is informed by underpinning theories (e.g. colour, gestalt, semiotics, etc.). Whether they realise it or not, when creating any form of graphic design or illustration, they are semiotically constructing the most suitable form of visual *Transmission* of the intended message to their *Receivers* - their target audience (Hall, 2006, p8). In this paper I argue that this aversion is merely an estrangement, caused by the complexity of a theoretical language that is alien to them. So my paper's aim is to facilitate the development of a designer-centric meta-language to bridge this issue.

It was through my own practice-based design research that I became aware of this interstitial divide between practice and theory. I found this intriguing and in the next section, through a focused review of the existing Peircean literature I will illustrate where I believe this estrangement to be based on my own design research outcomes. Then I will discuss the metaphor of a semiotic Rosetta Stone to demonstrate how a designer-centric meta-language can interface between practice and theory. In the next section, the complex language of Charles Sanders Peirce's pragmatic semiotic theory of Semiosis (1931-1933) will be reviewed, from the perspective of design practitioners.

2. The Existing Peircean Literature and the Designer

The semiotician Umberto Eco (1976) explains semiotics as being "concerned with everything that can be taken as a sign" (p7). As a design practitioner I chose Charles Sanders Peirce's (1931-1933) pragmatic form of semiotic theory for my design research, as Pragmatism is a philosophy that historically has influenced visual communication design (Findeli, 1990; Moszkowicz, 2009). Peirce, one of the three founders of Pragmatism believed that "our knowledge is acquired and shared with others in the forms of signs" (Jappy, 2013, p3). Peirce called his form of semiotics Semiosis, and developed its theoretical ground in the USA at the beginning of the 20th century. Ironically at the same time in Europe, Ferdinand de Saussure (2013) was developing another semiotic theory based on linguistics that he named Semiology. Semiosis is Peirce's formalised system of pragmatic sign-action (Ashwin, 1984, p43) through which he defined ten classes of semiotic signs, rising from the simple to complex. This sign-action (Semiosis) comprises of triadic inter-relationships between 'the sign itself, the user of the sign and the external reality - the *Object* - referred to by the Sign' (Crow, 2010, p22). In volume two of his collected works Peirce describes this triadic division as:

> "A sign, or *representamen*, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the *interpretant* of the first sign. The sign stands for something, its *object*" (Peirce, 1932, p135).

Immediately, we as a reader (and designer) are exposed to two unfamiliar terms which Peirce created to explain the fundamentals of sign-action - a *representamen* and an *interpretant*. As we read Peirce we become aware of the increasing complexity of his theoretical language. Added to his complex lexicon of terms his semiotic theory is not in a single volume, but spread across three different volumes of collected papers, so it is easy to locate where designers' estrangement begins. Secondary writers on Semiosis such as Jappy (2013) and de Waal (2013) thankfully disseminate Peirce's theory in single volumes that designers can access, but these authors naturally still stay true to his complex language to explain his doctrine of signs. This is an issue because Peirce's pragmatic semiotic theory offers those engaged in practice-based design a practical theoretical framework, through which they can craft effective visual communication outcomes, but to do this designers (currently) have become Peircean scholars. Professor Crow (2010), in explaining Peirce's semiotic

sign-action in his popular book on general semiotic theories *Visual Signs*, at least comes from a graphic design practice background. So he explains Semiosis' triadic determination flow (between a *representamen*, an *object*, and an *interpretant*), using clearer, plainer language. But as his semiotic design book also covers Saussure's Semiology he cannot provide a designer with depth. Other Peircean authors have attempted this depth. Jappy (2013) in his book *Introduction to Peircean Visual Semiotics* simplifies Peirce's explanation:

> "We can say that the sign is the special case where the *representamen* produces an effect on an animate, and most interestingly, on a human, interpreter. It follows, then, that signs are but one highly specific class of *representamens*: not all *representamens* are signs, but all signs are *representamens*" (p13).

But unlike Crow, Jappy is a semiotician and not a designer, and so uses Peirce's own terminology of how determination flow works to explain that very terminology, which is problematic if it is the terminology that is a barrier to designers understanding Semiosis. There are alternatives to explain how Semiosis works. Roderick Munday (cited in Chandler, 2007) provides a useful metaphor to put Semiosis into simpler terms. He describes Semiosis as an opaque, labeled box containing an object:

> "The first thing that is noticed (the *representamen*) is the box and label; this prompts the realization that something is inside the box [the *object*]. (...) We only know about the *object* from noticing the label and the box and then 'reading the label' [the *interpretant*] and forming a mental picture of the *object* in our mind. Therefore the hidden *object* of a sign is only brought to realization through the interaction of the *representamen*, the *object* and the *interpretant*" (p31).

In my own doctoral research I found myself having to become a Peircean scholar first to then implement the theory into my own practical work (Wood, 2016). I first had to decipher and learn a new lexicon of Peirce's theoretical terms, and while in general terms an expanded vocabulary is never a waste, it is a real barrier that prevents design practitioners from positively engaging with relevant theories. Practicing designers have been educated within their own design disciplines (whether it is graphic, interaction, fashion, product design, etc.) and so also have specific terminology peculiar to it, which to non-designers can be equally obtuse and complex. So that design practitioners can benefit from applying complex theory to their work, and in this paper's case pragmatic semiotic theory, a way must be found to communicate theory in clearer language, as most designers are naturally unschooled in philosophical and theoretical depth as it is a dedicated curriculum. To give an example to support my progressive designer-centric argument, I will briefly provide the reader with an overview of the issue.

Peirce describes the *representamen*, *object* and *interpretant* as each having three subclasses that correlate to develop ten classifications of semiotic signs, from simple to complex sign-action. The subclasses of a *representamen* are a *qualisign*, a *sinsign*, or a *legisign*; an *object* is either an *icon*, an *index*, or a *symbol*, while an *interpretant* is either a *rheme*, a *dicent* (or *dicisign*) sign, or an *argument* (Peirce, 1932, pp142-146). There is not the space in this paper to explain each of these subclasses and how they correlate to work as ten different types of pragmatic semiotic sign, so in this paper I wish to focus instead on the complex theoretical terminology used and how an interface through a new designer-centric language can help design practitioners access Semiosis more easily. To do this I will offer one way this can be done, building on a precedent for clearer communication of Peirce that already exists as a developing trend in the latest Peircean literature.

In his book *Peirce: A Guide for the Perplexed* Cornelis de Waal (2013), an associate editor with the Peirce Edition Project, guides his readers through Peirce's philosophy including his doctrine of signs (p2). In doing this de Waal's language is clearer, and he does succeed in an exposition of Peirce's

theory that helps the lay reader (designer) to understand the tenets of the theory. But his primary target audiences are not visual communication designers, so the structuring of his exposition of the doctrine of signs still requires designers to process the theory to extract the relevancy to actual design practice. This is a mere statement of the obvious, rather than a critical review of de Waal's work, as he is joined by Albert Atkin (2016) in continuing this emergent academic trend of clearer writing on Peirce. Atkin's new book on Peirce clarifies the richness of Peirce's overall pragmatic philosophy using clearer language. To a design researcher this possible emergent trend in writing in plainer language is encouraging, but I still believe that if this trend is to continue designers need to become more active in collaboration with Peircean semioticians. Through collaboration, a designer-centric interface between the designers' tacit world and the richness of Semiosis theory can help to enhance the future effectiveness of visual communication design.

3. Language - Tools of the Trade?

While Peircean semiotic theory offers a rich theoretical framework through the doctrine of ten semiotic signs (1932, pp146-150), which can enhance visual communication design solutions, to its designers uneducated in philosophy, Semiosis' current terminology is immediately problematic. In the language used in visual communication design we have our own vocabulary of terms, which are in part idiosyncratic to our discipline, while sharing terms with other design disciplines. So whether we are focusing on the language from the tacit world of designers, or the language from the academic world of theoreticians, Friedman states that the specific vocabulary functions "as tools of the trade," and that "any working researcher in [that disciplinary] field who hears such a term will understand it" (Friedman, 2011). Consequently, those who are not from that discipline will have trouble with understanding that. If Peirce's language can be made more accessible through a designer-centric meta-language, translating the complexity of Semiosis' determination flow into language that designers' use, then its triadic sign-action (essentially between the message, its visual representation and eventual interpretation) can underpin and enhance visual communication design.

In this paper I purposefully use the term 'meta-language' rather than a 'meta-vocabulary.' Language is a structured form of communication with its own conventions (verbal, visual, written and physical) that allows humans to make sense of each other's ideas, needs and concepts. Whereas a vocabulary is merely a list of known words, but it is within the differing vocabularies used by designers and Peirce where the problem of estrangement arises. It was through my own design research (Wood, 2016) in the application of the fourth of Peirce's ten semiotic sign classifications into practical work on visualising human behaviour, that I began developing a designer-centric meta-language. In this design research I experimented with the fourth sign to construct montages to visually communicate individual phenomenological moments within users' lived experiences to improve future interaction designs.

Peirce defines the fourth semiotic sign as a sign of direct experience, and used as an example a cockerel-shaped weathervane, the type of which you see on public buildings. In his example a weathercock is a semiotic sign for the direction of the wind. The direct experience of observing where the weathercock points to represents to an observer a message that they can interpret to understand the direction of the wind. Peirce (1932) calls this fourth sign a *Dicent Indexical Sinsign* or a *Dicent Sinsign* for brevity (p147). Up to the point of using Peirce's name for the fourth sign I am sure, as a reader you were following the theory, and then >BANG< the technical vocabulary gets in the way. I have seen this disconnect between Peirce's semiotic theory, and the language he developed to express it, happen many times when I try to explain Semiosis to designers and students, and in public discourse and conferences. If we follow Friedman's (2011) statement above,

we can see that a Peircean semiotician, philosopher, or scholar, will accept and understand that a *Dicent Indexical Sinsign* is simply a semiotic sign that proposes (*Dicent*) an actual connection to an existent thing (*Indexical*), as a single sign for what is experienced (*Sinsign*). The terms of *Sinsign* (single sign), *Dicent* (proposition) and *Indexical* (pointing to an existent thing) are tools of a Peircean semiotician's trade. But to anyone else they are unfamiliar, obtuse, and problematic, and to the designer (untrained in semiotic theory beyond a lesson while at design school), these terms are immediately alien and off-putting. But, the theory behind the complex terms is very pertinent to the improvement of visually communicating concepts. In the following section I will discuss the metaphor of a semiotic Rosetta Stone to develop the application of Semiosis to design practice. This is one way to reframe Semiosis' language of sign-action into a more designer-centric meta-language without diminishing the integrity of the former, to build an interface between Peirce's language and designers' language.

4. A Designer's Semiotic Rosetta Stone

The Rosetta Stone metaphor I use is a designer-centric interface between the complexity of semiotic theoretical language, and designer or illustrator's practical needs. In this way a semiotic Rosetta Stone encapsulates a way to synergise a designer-centric meta-language to help them to apply more theory into their practice, through quicker and clearer understanding of the theory. Taking inspiration from the original ancient Egyptian Rosetta Stone rediscovered in 1799. Since the Bronze Age, no one understood or could unlock the language of Egypt's hieroglyphics. Its alluring complexity of lost understanding was an impenetrable puzzle to modern people. On the stone the same ancient text was engraved in three languages. At the top of the stone the Egyptian hieroglyphics sat, below that an arcane demotic script (a simplified, priestly, written form of hieroglyphs), and finally below that there was ancient Greek. The French (and then British) scholars who were studying the Rosetta Stone understood ancient Greek, and to some degree the demotic script. This is when they realised that the stone featured the same message in three different languages. It was from the ancient Greek to the demotic script the scholars began to decipher pharoahic names, and from using the Demotic script as a bridging meta-language, they finally broke the meaning of hieroglyphics, unlocking millennia of knowledge hidden in plain sight.

In the metaphor of a semiotic Rosetta Stone the hierarchy is clear. The highest language to be understood is Peirce's Semiosis theory (the hieroglyphic level), and the lowest is the tacit language of everyday designers (the Greek level). Interfacing between these two hierarchical levels is a new designer-centric meta-language (the Demotic level). As outlined earlier in this paper theoretical language its own parameters, and within its disciplinary norms, precisely frames its propositions. But to the layperson, outside of that theoretical discipline, theory can be as intelligible as ancient hieroglyphics and impenetrable to design practitioners. Visual communication designers tacitly understand that what they create, through their skilful aesthetic manipulation of text and imagery, will represent an intended message to a target audience. If they are successful in their design or illustration, the audience will interpret that message as originally intended. In this process of visual communication we see in plain language the basic tenets of Peirce's theory of Semiosis. They create practical work that visually communicates (denotatively or connotatively) a message [*object*] through representation [*representamen*], so that the audience can understand it [*interpretant*].

So let's now explore in more depth these areas of message|*object*, representation|*representamen*, and understanding|*interpretant*, from a designer-centric perspective. Frascara (2004) argues that

visual communication designers are in fact facilitators of behavioural change within their target audiences, as their audiences are not passive consumers of their design outputs, but socio-cultural interpreters (whether consciously and subconsciously) of its meaning. Its outputs are message-led from a visually solved communication design problem. These design outputs or illustrations do this from within a communicational situation, which structures the visual communication of the intended message (whether this is through branding, packaging, in a magazine's personality, or an illustrated text). There are a variety of ways to achieve this as the design outcome may simply need to just denote the message (i.e. *this* = *this*), or it can be subtler, nuanced, and smart in connoting the message (i.e. *this* = *that*). Like Peirce's theory this means that the designer has a simple to complex range of options to visually communicate meaning.

Through Peirce's ten classifications of semiotic signs utilising the inter-relationships between the message|*object*, its representation|*representamen*, and successful understanding|*interpretant*, visual communication design can enhance its ability to successfully communicate visually. But Peirce's theoretical language and terms are problematic to 21st century designers. He defined his terms in the early 20th century, but while many terms as we have seen already are simply arcane, some are familiar - which as we shall illustrated below, are also confusing. In Semiosis Peirce defines the subclasses of an *object* as either an *icon*, an *index* or a *symbol*, but in design these terms do not mean the same as he intended. Design meanings are at odds to his theory. To explain what he intended I'll use plainer, designer-centric language and annotate his terms to the designers' tacit language.

In a piece of graphic design or an illustration, if the visually communicated message is to be denoted then its representation will have a visual similarity to (*icon*), or a direct connection to (*index*), the source of the message e.g. the designed box packaging of a product features typography and images helping to clearly communicate that what's featured ON the box can be found IN the box. But if the message can be more nuanced in how it is communicated, it can be connotated through more sophisticated manipulation of text and imagery (*symbol*) e.g. an editorial illustration for a magazine article that visually communicates the article's essence by creatively utilising metaphor, similes or analogies. In these two examples the beginnings of a designer-centric meta-language pragmatically emerges, facilitating designers' understanding of the complex theory framed through practice. To give a further example of this let's use the semiotic Rosetta Stone to understand the basics of Semiosis in a designer-centric way. In Figure 1 we can see three sections of the metaphorical semiotic Rosetta Stone. At the top of the image is the Peircean section, and then at the bottom is the designer's tacit language section. Bridging these two sections in the middle of the image is the meta-language section.

As an example I am using Peirce's statement first quoted in section 2 above on the fundamental triadic relationship within sign-action. In this original text we can see the complex Peircean terms such as *representamen* and *interpretant* that are unfamiliar to non-semioticians. In this he explains the triadic relationships in reference to a general 'sign' and a non-specific 'person.' At the bottom of the image in the tacit section the 'semiotic sign' is not even referenced. Tacitly visual communication designers already utilise many semiotic signs nested within their design outcomes, whether they are aware of the semiotics or not. In the bridging middle section the designer-centric meta-language can be seen to have replaced *representamen* and *interpretant* with the clearer terms represented and interpreted reflecting a designer-centric perspective. Also *object* has been replaced with concept. This is more than a semantic 'shift' in vocabulary as the entire sentences from the top to the bottom have also been reconfigured.

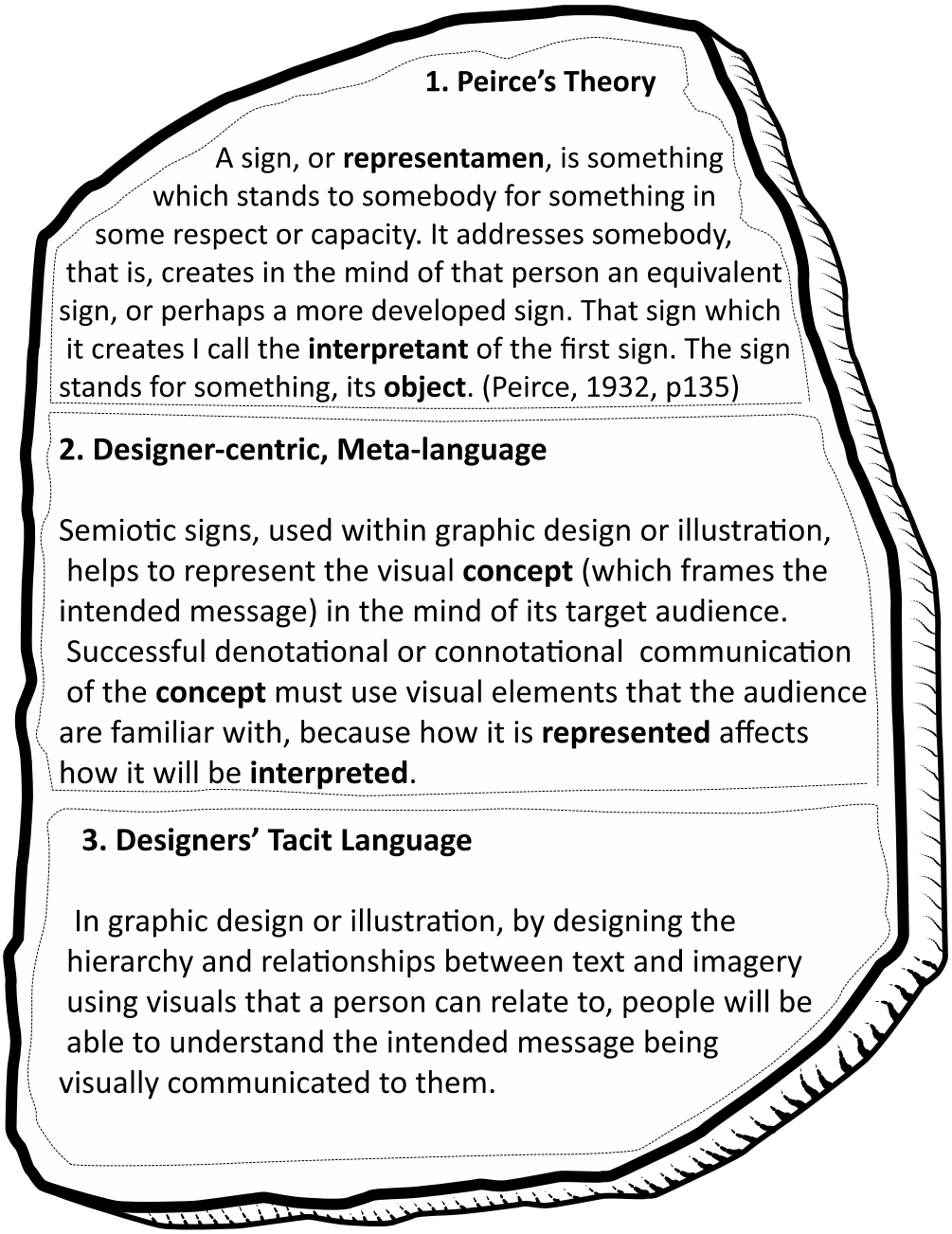

Figure 1: An example of the designer-centric meta-language interface between designers' tacit language and Peircean theory, using the metaphor of a semiotic Rosetta Stone.

Figure 1 is only for illustration purposes, and I am not advocating that design practitioners draw images of stone tablets to 'translate' Peircean theory. In reality, the tacit section reflects the every-day design thinking of practitioners that theory needs to synergise with. It is in the hands of design researchers to collaborate with Peircean semioticians to create such an interface between design practitioners and theory, to enhance their visual communication. In Table 1 I have included a brief overview of how such a meta-language can be formed. In the final section of this paper I will now summarise how this may be achieved.

Table 1: An initial draft of a designer-friendly meta-language, mapping Peirce's terms to terms more accessible to designers.

Peircean Term	Designer-centric Meta-Term	Description
REPRESENTAMEN	REPRESENTATION	How the semiotic sign (and its idea, message or meaning) is visually communicated to the viewer.
Iconic (Icon)	A resemblance to	A likeness or a similarity using shared qualities to the semiotic idea, message or meaning used to attract attention to the presence of a semiotic sign.
Indexical (Index)	A direct connection to	An existential representation that dynamically associates itself with its semiotic idea, message or meaning, but asserts nothing more than its association 'this is that.'
Symbolic (Symbol)	A general learnt and agreed connection to	For symbolic representation to be effective the audience has to learn that 'this means that.'
OBJECT	CONCEPT	An idea, message or meaning to be visually communicated within the sign-action.
Qualisign	A quality used as a semiotic sign	The perception of how a quality of something visually communicates an idea, message or meaning.
Sinsign	A single, immediate image	The use of a single image of an actual existent thing or event that is used as a sign of it.
Legisign	A visual trope	An image that has been socio-culturally already established as a significant trope that has agreed meaning within a specific audience.
INTERPRETANT	INTERPRETATION	How the viewer interprets the semiotic sign to understand its visually communicated idea, message or meaning.
Rheme	A possibility	The interpretation of the semiotic idea, message or meaning will possibly be…[X].
Dicent	A proposition	The interpretation of the semiotic idea, message or meaning is proposed as…[X].
Argument	An agreed interpretation	The interpretation of the semiotic idea, message or meaning is generally accepted to be…[X].

5. Summary

In this paper I have proposed a designer-centric meta-language as an interface to improve aesthetic practice. This is in the tradition of, but independent of, other designer-centric interventions between

practice and theory, such as Dr Terence Love's (2000) meta-theoretical structure; nor is it a mere taxonomical substitution of a Peircean term for a designer's term. I am arguing for a level of interfacing between designers and theoreticians (in particular visual communication designers and Peircean semioticians), to find a genuine bridge between theory and aesthetic practice. In doing so I would position it as a designer-centric contribution to the current trend by Peircean scholars to demystify Peirce for non-semioticians, interfacing to explain Semiosis in language more aligned to designers. Love, warns us of the dangers of designers conflating design research and practice with theory (Love, 2000, p295), so the interface I propose using the metaphor of semiotic Rosetta Stone, avoids compromising the integrity of Peirce's theory.

The development this designer-centric meta-language is an area of ongoing design research that would benefit from the input of Peircean semioticians, to contextualise the application of Semiosis within enhancing aesthetic practice. It is gratifying to see that other designers and educators, such as Steven Skaggs from the University of Louisville with his soon to be published book *Firesigns: A Semiotic Theory for Graphic Design* (in press), are also addressing ways to improve the designer-centric dissemination of Peircean semiotic theory. My own design research seeks to develop the bridge between Peircean semiotician and designer further. Two immediate research projects include a book project that employs a triadic structure to contextualise and explain Semiosis within visual communication, and the establishing of an international research network between designer educators and practitioners, and Peircean semioticians.

The book is written in three sections exploring Peircean semiotics from its theory, its use to deconstruct meaning in existing designs and illustrations, and finally to construct new designs and illustrations through employing Peirce's ten semiotic signs. To facilitate this, each page is designed using the Rosetta Stone metaphor. Through the use of example images, explanatory text (in a designer-centric meta-language), together with more academic text using supporting box-outs, a designer will be able to pragmatically develop their own understanding of Semiosis. This book is at the proposal stage with my current publisher Bloomsbury Publishing.

The second project is a research network that addresses the need to engage with semioticians in a more structured and collaborative manner. This project is at the initial scoping stage of writing the research bid, and I am currently sourcing more international academics from Peircean philosophy and design to collaborate with. As a 'Peirce for Designers' research network I propose a series of symposia through which a meta-language can be expanded to ensure that it is not oversimplified, so avoiding the creation of ungrounded knowledge. So the development of this designer-centric meta-language for Semiosis will need to give designers the confidence to understand its semiotic theory, without them having to first become academic scholars. Through a Rosetta Stone approach this aim can become achievable, and Peirce's Semiosis will reach a wider audience.

References

ATKIN, A. (2016) *Peirce*. Abingdon: Routledge.

ASHWIN, C. (1984) *Drawing, Design and Semiotics*. Design Issues, **1**(2), pp42-52.

CHANDLER, D. (2007) *Semiotics: The Basics* [2nd Edition]. Oxford: Routledge.

CROW, D. (2010) *Visible Signs: An introduction to Semiotics* (2nd Edition). London: AVA Publishing.

de SAUSSURE, F. (2013) *Course in General Linguistics*. London: Bloomsbury Academic.

de WAAL, C. (2013) *Peirce: A Guide for the Perplexed*. London: Bloomsbury.

FINDELI, A. (1990) Moholy-Nagy's Design Pedagogy in Chicago (1937-46). Design Issues, 7(1), pp4-19.

FRIEDMAN, K. (2011) *RE: Literacy*. 29th June. PHD-DESIGN. [Online]. [Accessed 23rd December 2013]. Available from: https://www.jiscmail.ac.uk/ cgi-bin/webadmin?A0=phd-design.

HALL, S. (2007) *This Means This, This Means That: A User's Guide to Semiotics*. London: Laurence King Publishing Ltd.

JAPPY, T. (2013) *Introduction to Peircean Visual Semiotics*. London: Bloomsbury.

LOVE, T. (2000) *Philosophy of Design: a Meta-theoretical Structure for Design Theory*. Design Studies, **21**(3), pp293-313.

MOSZKOWICZ, J. (2009) Phenomenology and Graphic Design Criticism: A Reevaluation of Historical Precedents in the Age of New Media. Doctoral dissertation, University West of England, Bristol.

PEIRCE, C.S. (1931) *The Collected Papers of Charles Sanders Peirce. Vol. 1 Principles of Philosophy*. Cambridge: Harvard University Press.

PEIRCE, C.S. (1932) *The Collected Papers of Charles Sanders Peirce. Vol. 2 Elements of Logic*. Cambridge: Harvard University Press.

PEIRCE, C.S. (1933) *The Collected Papers of Charles Sanders Peirce. Vol. 3 Exact Logic*. Cambridge: Harvard University Press.

PEIRCE, C.S. (1934) *The Collected Papers of Charles Sanders Peirce. Vol. 4 The Simplest Mathematics*. Cambridge: Harvard University Press.

ROCK, M. and POYNOR, R. (1995) *What Is This Thing Called Graphic Design Criticism?* Eye 4(16), pp56-59.

SKAGGS, S. (in press) *Firesigns: A Semiotic Theory for Graphic Design*. *Massachusetts: The MIT Press.*

WOOD, D. (2016) *A Visual Phenomenological Methodology: The Repositioning of Visual Communication Design as a Fresh Influence on Interaction Design*. Ph.D. thesis, Edinburgh College of Art, University of Edinburgh.